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WATER RESOURCES ACTIVITIES IN THE
UNITED STATES. WATER RECREATION NEEDS
IN THE UNITED STATES, 1960-2000

Select Committee on National Water Resources,
U. S. Senate

May 1960

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86th Congress }
2d Session }

COMMITTEE PRINT NO. 17

WATER RESOURCES ACTIVITIES
IN THE
UNITED STATES

WATER RECREATION NEEDS IN THE
UNITED STATES, 1960-2000

SELECT COMMITTEE ON NATIONAL WATER RESOURCES
UNITED STATES SENATE

PURSUANT TO

S. Res. 48

EIGHTY-SIXTH CONGRESS



MAY 1960

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(II)

STATEMENT BY THE CHAIRMAN

MAY 11, 1960.

To the Members of the Select Committee on National Water Resources:

In calling for a study of water resources activities under the provisions of Senate Resolution 48, the Senate took cognizance of the rapidly rising demands for water-related outdoor recreation by directing this committee to consider the character and extent of projects needed for all purposes between now and 1980, including among others the realization of recreational values.

There are many factors which have led to the recent tremendous increase in outdoor recreation; among the more obvious being an expanding population, higher income per capita, more leisure time, and greater mobility. Although it is impossible to predict with certainty that these factors will continue in the coming decades, all indications point to these trends being present in ever-increasing proportions. During the postwar decade from 1946 to 1956, visits to national parks rose from 21,752,000 to 54,923,000, or 153 percent. Attendance figures at reservoirs constructed by the Corps of Engineers, the Bureau of Reclamation, and the Tennessee Valley Authority are even more spectacular, increasing from some 58 million in 1952 to over 150 million in 1958, an increase of almost 200 percent in only 6 years. It was with these facts in mind that I asked the National Park Service of the Department of the Interior to prepare a report on water recreation needs in the United States from the present time to the year 2000, and to make recommendations as to how these needs can best be fulfilled.

A report by the staff of the National Park Service has now been furnished the committee. The report contains estimates that visits to national parks will increase from 63 million in 1959 to 240 million by 1980, and well over 400 million by the year 2000. It is also estimated that visits to national forests, and national, State, county, and municipal parks will reach 8 billion per year by 1980, and 13.4 billion by the year 2000. An estimated withdrawal of 63.7 billion gallons of water will be required for National, State, and county parks in 1980 and 101.8 billion in the year 2000. Although the report indicates that the total volume of withdrawal water needed is relatively minor in comparison with water needs for agriculture, industry, and other uses, the quantity and quality of water surface needed for recreational activities is great and the need is steadily becoming more and more critical.

The report sets forth 17 recommendations which the staff of the National Park Service believes would assist in providing for future demands for water recreation. These suggest that we should consider taking steps for the acquiring of 15 percent of our general ocean and major inland water shoreline (about 6½ percent are presently in Federal and State ownership for public recreation purposes along our Atlantic and gulf coasts); preservation of certain free-flowing streams whose recreational values are believed to outweigh their value for other water development purposes; continuing and expanding efforts by all levels of government to prevent pollution of streams, rivers, lakes, reservoirs, and seashore areas; adoption of a policy that recreational potentialities of all Federal multiple-purpose reservoirs be developed for public use; and evaluation of the measurable recreation benefits and the joint and separable costs that should be charged as a Federal cost to recreation, which shall be made nonreimbursable and nonreturnable.

This report will be of interest, not only to the members of the committee and of the Senate, but to all who are interested in outdoor recreation, especially that segment connected with activities requiring water. Accordingly, I am having it printed as one of our committee prints on water resources activities in the United States.

ROBT. S. KERR,
*Chairman, Select Committee on
National Water Resources.*

COMMUNICATIONS

AUGUST 13, 1959.

HON. FRED A. SEATON,
The Secretary of the Interior,
Department of the Interior, Washington, D.C.

MY DEAR MR. SECRETARY: Thank you for Acting Secretary Bennett's letter of July 24, enclosing a brief statement on water resource problems confronting the Department of the Interior, prepared in response to the request of the Senate Select Committee on National Water Resources. Among other problems discussed in the statement are those pertaining to recreation and fish and wildlife conservation.

In its studies of water resource activities in the United States under Senate Resolution 48, the committee is charged with making suitable provisions for recreational and fish and wildlife values. While an exhaustive study of outdoor recreation, including the recreational aspects of water resources, is being made by the Outdoor Recreation Resources Review Commission, the results will not be available in time to be used by this committee. Accordingly, we are writing to ask that reports on recreational needs and fish and wildlife conservation requirements in connection with water resources development be prepared by the qualified agencies of the Department of the Interior.

Principal objective of each report should be to inform the committee on estimated needs in these fields by the years 1980 and 2000, and to present the Department's recommendations as to what needs to be done to accommodate the demands.

The report on recreational requirements should cover recent trends in demands for water using or water related recreational services, distinguishing between 1 day or weekend use and annual vacation use, and unsatisfied demands. Projection of demands to 1980 and 2000 should be made, taking cognizance of the increasing trend toward urbanization and other economic, demographic, and social trends, and present and potential unsatisfied demands for recreational services. Present adequacy of facilities to meet these demands should be covered by region, recognizing both natural as well as artificially developed facilities. Estimated demands for water recreational facilities through 1980 should be discussed together with likely needs for water development to meet such needs, including quantitative and qualitative aspects of water supplies required.

We would also like to have an analysis of demands for water recreational activities of several typical metropolitan areas with recommendations for development to meet demands by 1980. Selection of cities should be worked out with the committee staff.

The report on fish and wildlife conservation in relation to water resources development should cover existing and projected future value of our fish and wildlife resources covering both commercial and noncommercial and intangible values. Relation of fishing and hunting to other recreational activities should be discussed together with the relation of fish and wildlife conservation activities to other water resources development activities. Estimated needs in this field through 1980 and looking ahead to the year 2000, including both quantitative and qualitative estimates of needs for water should be covered together with the Department's recommendations as to what measures should be taken between now and 1980 to meet these needs.

Each of the 2 reports should be not more than 10,000 words in length with whatever tables, charts, appendixes, and graphic illustrations as may be considered necessary. It would be most helpful if these reports could be furnished the committee by November 1, 1959. Projections of population and economic assumptions and regional boundaries on which the analyses should be based will be furnished by staff members of Resources for the Future, Inc., who are working cooperatively with the committee in

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developing water supply-demand relationships for all purposes. To assist them, we would like to have information relating to the water supply and demand aspects made available to them informally during the course of your studies.

The committee staff will be glad to discuss any other problems which may arise in the preparation of the reports with representatives of the Department or of the agencies to which preparation of these reports is assigned.

Sincerely yours,

ROBT S. KERR, *Chairman.*

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., May 4, 1960.

HON. ROBERT S. KERR,
Chairman, Select Committee on National Water Resources,
U.S. Senate, Washington, D.C.

DEAR SENATOR KERR: In accordance with the request of the Senate Select Committee on National Water Resources there are enclosed two copies of a report entitled "Water Recreation Needs in the United States, 1960-2000."

The report was prepared by the National Park Service and contains a number of recommendations dealing with the recreation needs of the country. It has not been discussed with other interested departments, however, and it should therefore be considered only as a staff paper that does not represent departmental recommendations for legislative or budgetary action at this time.

Sincerely yours,

ELMER F. BENNETT,
Under Secretary of the Interior.

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WATER RECREATION NEEDS IN THE UNITED STATES, 1960-2000

INTRODUCTION

Since World War II, the demands for outdoor recreation have greatly accelerated and much of this recreation activity is concerned with the use and enjoyment of our water resources. All indications point toward a continuing increase of these demands.

The total volume of withdrawal water needed to supply future park and recreation area visitors, although very important, is relatively minor in comparison with water needs for agriculture, industry, and other uses. The quantity of surface water needed for recreation is great and the need is steadily becoming more and more critical. Fortunately, surface water used for recreation can also serve other needs.

Unfortunately, however, it is practically impossible to evaluate water surface needs by either volume or surface acres. For example, the water surface needs for such recreation activities as boating, swimming, or scenic enjoyment are much too variable to use as a basis for future projections. Consequently, this report includes only statistical data where a relatively sound basis for evaluation and estimation exists. In addition, various water recreation problems are outlined along with recommended desirable policies and programs for meeting the Nation's water recreation needs during the period 1960 through 2000.

SUMMARY

Recent trends indicate a rapidly increasing interest and participation in water recreation activities, especially in swimming, boating, water skiing, skin diving, and in the enjoyment of waterfowl and other aquatic life.

Present water recreation facilities are generally overcrowded and many public land administrators

are making plans for more intensive and extensive use of existing areas.

Estimated future increases in travel, personal income, and leisure time, when added to estimates of future population growth, indicate that national park visits will increase from 63 million in 1959 to 240 million by 1980 and well over 400 million by the year 2000.

Probably the major portion of outdoor recreation is associated with water areas and the future demands in this respect are indicated by estimations that total outdoor recreation visitation to national parks, national forests, State parks, county parks and municipal parks will reach 8 billion per year by 1980 and 13.4 billion by the year 2000.

Reliable statistical data are not available to estimate future surface or shoreline needs for water recreation. However, certain criteria can be used to estimate withdrawal use of water in parks and recreation areas. Generally speaking, today's design principles should provide for a minimum of 155 gallons per visitor to national parks, 75 gallons per visitor to State parks, and 30 gallons per visitor to county parks. Application of these figures to visitation estimates results in an estimated withdrawal use of water of 63.7 billion gallons in 1980 and 101.8 billion gallons in 2000 for National, State and county parks.

Many of the problems of the National Park Service result from the lack of adequate Federal water policy and State water laws which are not yet fully adaptable to recreation. In this respect, for example, the basic values of Everglades National Park depend upon maintaining adequate flow of water through the park. Other major water problems of the Service are primarily concerned with adequate water supplies for areas in arid regions.

(1)

RECOMMENDATIONS

In order to provide for future demands for water recreation the following recommendations are made:

1. That 15 percent of our general (excluding inlets and islands) ocean and major inland water shoreline be acquired by various levels of government for public recreation use purposes. This compares with about 6½ percent presently in Federal and State ownership for public recreation purposes along our Atlantic and gulf coasts.

2. That certain streams be preserved in their free-flowing condition because their natural scenic, scientific, esthetic and recreational values outweigh their value for water development and control purposes now and in the future.

The tremendous increase in needs for water for all purposes now and in the future will require a high order of development and control of most of our water resources. Particularly, in areas of dense population and in arid regions, clear, natural running water is now a rarity and under the pressure of anticipated future requirements may become nonexistent. However, there still remain in various sections of the country natural free-flowing streams whose integrity might be preserved in the face of the water control onslaught if conscientious planning to this end were applied.

Some suggested streams whose natural scenic, scientific, esthetic, and recreation values may outweigh their value for water development and control purposes both now and in the future are:

Maine: Allagash River.

Missouri: Current and Eleven Point Rivers.

Oregon: Rogue River.

Other streams throughout the country may possess similar qualities worthy of preservation. A study to determine such values should be made.

3. That efforts be continued by all levels of government and commercial interests to prevent pollution of streams, rivers, lakes, reservoirs and seashore areas. Such pollution has had and continues to have adverse effects on the availability of important recreation areas.

4. That Congress adopt the policy that the recreational potentialities of all Federal multiple-purpose reservoirs are to be developed for public use.

5. That in furtherance of this policy, the Secretary of the Interior be authorized to evaluate the recreation potentialities of and determine the need for recreation facilities at Federal reservoirs, and prepare plans for recreation developments and use, including studies of the lands necessary therefor.

6. That in evaluating the recreation potentialities of Federal reservoir areas, the Secretary of the Interior be authorized to designate those which possess recreation resources of national significance, basing his designation upon criteria such as nationwide public interest in the water resource project itself, the presence within or adjacent to the water resource area of outstanding scenic, historical, scientific, or archeological values of interest to the Nation, and projected use by out-of-State visitors: Provided, the Secretary shall first consult with the Governors of the State or States in which the proposed recreation areas are situated, the head of the Federal agency having control of the reservoir and the Advisory Board on National Parks, Historic Sites, Buildings and Monuments established pursuant to section 3 of the act of August 21, 1935 (49 Stat. 666), and shall obtain their recommendations on such designations, before submitting his recommendations to the Congress.

7. That land and interests therein necessary for recreation developments and for the recreation use of such nationally significant areas, including access roads, and facilities for the safety, health, and protection of the visiting public, may be procured by the Secretary of the Interior by such means as he considers to be in the public interest, including withdrawal of public lands required for such recreation purposes.

8. That the reservoir recreation resources of areas of national significance shall be developed and administered by the Secretary of the Interior in such manner as will provide public use and enjoyment of the outstanding values.

9. That for Federal reservoirs not designated as being of national significance, the Secretary of the Interior shall make recreation plans available to the agency responsible for the construction and operation of the reservoir, and the head of each such agency shall recommend to the Congress legislation to authorize the procurement of land and interests therein recommended for acquisition in

the recreation plan for the reservoir, and in connection therewith the Secretary of the Interior may withdraw the minimum area of public lands required for recreation purposes.

10. That on land so acquired or withdrawn the Secretary of the Interior be authorized to construct minimum basic recreation facilities, including access roads and facilities for the safety, health, and protection of the visiting public, if prior thereto the affected State or local subdivision thereof enters into an agreement with the Secretary assuming responsibility for the operation and maintenance of the recreation area and the facilities thereon for a period of at least 20 years following their completion.

11. That the Secretary of the Interior be authorized to determine the measurable recreation benefits and the joint and separable costs that shall be charged as a Federal cost to recreation, which shall be nonreimbursable and nonreturnable, such amount not to exceed 7½ percent of the cost of the project.

12. That funds for conducting recreation studies, preparing recreation plans, and developing and constructing recreation facilities in accordance with these recommendations shall be made available by transfer to the agency within the Department of the Interior responsible for such studies and plans and facilities from appropriations or any other funds available for investigations, engineering, or construction of the Federal multiple-purpose reservoir project.

13. That the Secretary of the Interior be authorized to construct water-control projects having public recreation as their primary purpose, the reservoirs of such projects not to exceed 2,500 surface acres in area. The Secretary may procure land and interests therein and may withdraw public land required for the reservoir and its related recreation activities, and he may construct thereon minimum basic recreation facilities. Such projects shall not be undertaken, however, until an agreement has been executed with the affected State or political subdivision thereof under which the State or political subdivision assumes responsibility for the operation and maintenance of the project immediately following its completion, such agreement to cover a period of at least 20 years.

14. That after 20 years of State or local operation and maintenance, the Secretary be authorized

to convey to the States or to the political subdivisions thereof, without consideration, the recreation facilities, including land therefor, provided under recommendations 9 and 13, when in his judgment such grantees are adequately prepared to administer, operate, and maintain such project areas for public park, recreation and conservation purposes.

The Secretary should be authorized to execute on behalf of the United States all necessary deeds to effect the purposes of this recommendation. Every such deed should contain the express condition that the grantee shall use the property exclusively for public park, recreation, and conservation purposes, and the further express condition that the United States assumes no obligation for the maintenance or operation of the property after the acceptance of such deed, and may contain such other conditions not inconsistent with such express conditions as may be agreed upon by the Secretary and the grantee: Provided, that the title and right to possession of any lands so conveyed, together with the improvements thereon, shall revert to the United States upon a finding by the Secretary, after notice to such grantee and after an opportunity for a hearing, that the grantee has not complied with such conditions during a period of more than 3 years, which finding shall be final and conclusive, and such lands and improvements thereon, upon such reversion to the United States, shall be returned to the jurisdiction of the Department of the Interior and upon determination of the Secretary may be considered as surplus real property to be disposed of in accordance with the surplus property laws.

To facilitate State or local administration of reservoir recreation areas and to consolidate the holdings of the grantees to whom such lands may be granted, the Secretary of the Interior should have authority to authorize any such grantee to exchange or otherwise dispose of any such lands or interests in lands conveyed to it in order to acquire other lands or interests therein of approximately equal value. For this purpose, the Secretary should be authorized to execute a release, as to the particular lands involved, of any condition providing for a reversion of title to the United States, that may be contained in the conveyance by the United States to said grantee. No such release

is to be executed, however, unless the grantee agrees, in form satisfactory to the Secretary, that the lands to be acquired by it shall be subject to the conditions contained in the original conveyance from the United States.

15. That the Secretary of the Interior be authorized to accept funds for planning for the public recreation use of reservoirs from licensees granted a license by the Federal Power Commission to construct a dam and reservoir. These projects are often of a size and importance comparable to major Federal multiple-purpose reservoirs. They impound public waters, often inundate public lands, and should be required to give the same consideration to public recreation values and use as is determined proper at Federal projects. The National Park Service has been requested from time to time by recreation-minded power companies to make recreation surveys and plans for proposed projects to be constructed under Federal Power Commission license. The Service does not, however, have authority to accept funds under these conditions. Authority to do so would be an important step in providing unified planning at major water-control projects.

16. That, insofar as feasible, recreation be recognized as an appropriate use of domestic water supply reservoirs and watersheds. Such reservoirs constitute an important potential water recreation resource. At present there is great variation in the extent of recreation use permitted of these areas. Studies have indicated that in many instances safe water supplies can be maintained where appropriate recreation use, including swimming and boating is made of the reservoir and watershed under proper control.

17. That a study of our inland waters and shoreline be made as it is vital to any program which would establish a long-range national policy of water resource use. Such studies should include an inventory and evaluation of major existing shoreline to determine quantity, quality, availability, accessibility, and appropriate uses; studies of water recreation activities to establish space and quality requirements of various activities on an individual and total basis; explanation of ways and means by which the best of our inland waters and shoreline may be protected from destruction and preserved for the benefits of our future citizens. The preparation of information for the Senate

Select Committee on National Water Resources has clearly revealed the lack of specific knowledge and data on inland water needs for recreation.

This Service's studies of our ocean and Great Lakes shorelines over the past several years have given us a broad understanding of what we have and how it might best be utilized. Legislation to effect a program of seashore preservation and use is urgently needed.

The attached statement on "Recommended General Policy of the Federal Government Relative to Public Recreation" is furnished as an appendix of this report to the Senate Select Committee on National Water Resources.

RECENT TRENDS

One way to make a reasonable forecast of future recreation demands for water is the examination of recent trends. Significant developments relative to some of the major water recreation activities are as follows:

Swimming

During the period 1950 to 1959, the number of residential swimming pools increased from 3,600 to 175,000—an increase of nearly 4,800 percent.

In 1955, 359 city and county bathing beaches had an attendance of almost 70 million and 1,100 swimming pools had an attendance of over 36 million—nearly 50-percent higher than reported in 1950.

State agencies reported that, in 1955, attendance at 181 State beaches was close to 18 million and attendance at 36 swimming pools was over 1 million.

Swimming is primarily a day-use activity with over 80 percent of total participation taking place on weekend days.

Boating

The January 1958 issue of *Outboard Boating* stated that—

America's pleasure boat fleet has nearly tripled in the last 10 years and there is now 1 pleasure boat in use for every 24 Americans.

Some 39 million of our citizens now take part in recreation boating annually and they use more than 8 million boats. This contrasts with the 15,900 pleasure craft in use on all U.S. waterways in 1904.

The Outboard Boating Club of America reports that 3,700 boat trailers were sold in 1947. By 1957 the number had increased to 165,000—one trailer for every 2 boats sold.

Boating is also primarily a day-use activity. However, some of the larger boats are used for weekend and vacation cruises.

Water skiing

Since World War II water skiing has grown to the point where 6 million Americans now engage in this popular water sport.

Skin diving

The popularity of this relatively new water sport is indicated by the \$15 million spent during 1959 for such aquatic items as swim fins, goggles, masks, diving suits, and scuba tanks.

Recreation use of reservoirs

In the 3 years from 1955 to 1958 the number of recreation visits rose 50 percent at reservoirs constructed by the Bureau of Reclamation, the Corps of Engineers, and the Tennessee Valley Authority. Total use in 1955 was estimated at 100,152,000 visitor-days, and by 1958 the corresponding figure was 150,851,000.

Annual attendance at civil works projects of the Corps of Engineers, 1950-58:	
1950	16,000,000
1955	62,522,000
1958	94,135,000
Estimated person-day visits to TVA reservoirs 1947-58:	
1947	7,338,755
1955	27,779,977
1958	36,600,408

Visitation to national seashore and recreation areas

Since World War II, visits to Lake Mead National Recreation Area are up 192 percent.

Visitation to Coulee Dam National Recreation Area increased 71 percent since 1947.

The 1957 visitation to Millerton Lake National Recreation Area was up 125 percent over 1948.

Last year's visitation to Shadow Mountain National Recreation Area showed a 332-percent increase over 1954.

The trend in visitation to Cape Hatteras National Seashore—one of the newer areas in the national park system—has been consistently upward. Visits increased by 78 percent from 1955 through 1959.

Visits to national seashore and recreation areas since World War II

(In thousands)

Year	Lake Mead	Coulee Dam	Millerton Lake	Shadow Mountain	Cape Hatteras
1946	1,162				
1947	1,426	28	131		
1948	1,654	292	401		
1949	1,421	391	422		
1950	1,798	281	472		
1951	2,051	269	448		
1952	1,947	395	562		
1953	2,221	258	551		
1954	2,113	280	477	237	
1955	2,675	219	605	156	265
1956	2,673	253	816	1,076	392
1957	2,955	267	992	1,111	324
1958	3,191	363	194	1,163	318
1959	3,341	449		1,925	472

¹ Transferred to State of California.

ADEQUACY OF PRESENT AREAS TO MEET DEMANDS

Most State and county parks are reported to be overcrowded at the present time, particularly those with water areas. Some specific examples are as follows:

During the past few years, Indiana Dunes State Park, the major public park on the south shore of Lake Michigan, has become overcrowded on holidays and has had to refuse entrance to waiting visitors. To relieve this situation, the State of Indiana plans to develop the natural area at the opposite end of the park for additional beach access.

In July 1955, the Michigan Natural Resources Conference reported that—

Almost all of Michigan's State parks are woefully inadequate in size and facilities to meet present needs of our own people and our hundreds of thousands of vacationists * * *. More lands and water areas are needed for overall outdoor recreation for Michigan's expanding population.

In Michigan, where most of the camping is water oriented, there were almost 10,000 campers denied the use of the Upper Peninsula parks in 1958 due to lack of space.

In the 1958 report, "An Inventory and Plan for Development of the Natural Resources of Massachusetts," it was noted that—

municipal fresh water beaches * * * are adequate to the needs of only about one-fifth of the population. While ready access to salt water beaches partly compensates for this lack, particularly on the cape and the islands, the shortage is so great in the western regions that

two-thirds of the people have no readily available municipal beaches.

Rooster Rock State Park, along the Columbia River, east of Portland, Oreg., was used to capacity from the day it opened in early summer of 1957. This well-planned park features a fine swimming beach. The extensive parking facilities were crowded even on weekdays. Over 348,000 visitors were recorded the first season. In 1958, beach, picnicking, and parking facilities had to be expanded.

PROJECTED DEMANDS FOR WATER RECREATION, 1980-2000

Social and economic factors

Participation in outdoor, water-oriented recreation is expected to continue to increase at a phenomenal rate. In order to estimate the demand this will place on our water resources an analysis is desirable of the forces at work to effect this increase.

Since recreation involves people, one of the first considerations is the estimated population growth. These estimates, of course, vary considerably and projections 40 years ahead to the year 2000 are subject to many unpredictable factors. An average of estimates from various sources place national population in 1980 at 245 million and in the year 2000 at 364 million.

The predicted increases in travel, income, and leisure time expected to influence future outdoor activities are shown on the chart on the following page.

Projected recreation demands

As shown on the following chart, social and economic factors, working together and to a degree compounding, are expected to increase national park visits to an annual total of well over 400

million by the year 2000. According to "The Crisis in Outdoor Recreation," published by Resources for the Future, the present rate of 10-percent annual increase in outdoor recreation will eventually taper off and, by the year 2000, total outdoor recreation visitation will increase tenfold. Assuming that more than half of this will take place by 1980, estimated future visitation to parks by 22 designated water resources regions is shown below.

At this time, research has not produced sufficient statistics to establish reasonably reliable criteria for optimum unit amounts of water surface or volume needed to supply future swimming and boating activities along with other water-oriented recreation benefits such as scenic and wildlife enjoyment. However, assuming that as much as 75 percent of outdoor recreation is water oriented, park visitation estimates in the table below can be used to compute possible future demands on water for recreation.

Projection of visitor days to National, State, county, and municipal parks by water resource regions

[Millions of visits]

Region	1980	2000
New England.....	412	657
Delaware and Hudson.....	954	1,560
Chesapeake Bay.....	508	892
Eastern Great Lakes.....	396	672
Ohio.....	764	1,248
Cumberland.....	82	132
Tennessee.....	189	321
Southeast.....	606	1,058
Western Great Lakes.....	520	865
Upper Mississippi.....	372	607
Lower Mississippi.....	142	236
Upper Missouri.....	455	758
Lower Missouri.....	134	208
Upper Arkansas-Red.....	204	324
Lower Arkansas-White-Red.....	156	238
Western Gulf.....	186	331
Rio Grande-Pecos.....	60	107
Colorado.....	182	335
Great Basin.....	29	59
Pacific Northwest.....	476	790
Central Pacific.....	260	497
South Pacific.....	410	715
Total.....	7,500	12,600

More parks are needed *Because--*

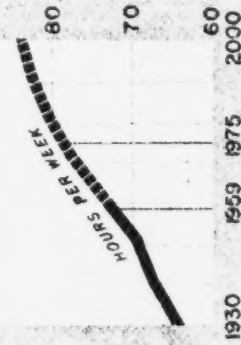
TRAVEL is INCREASING



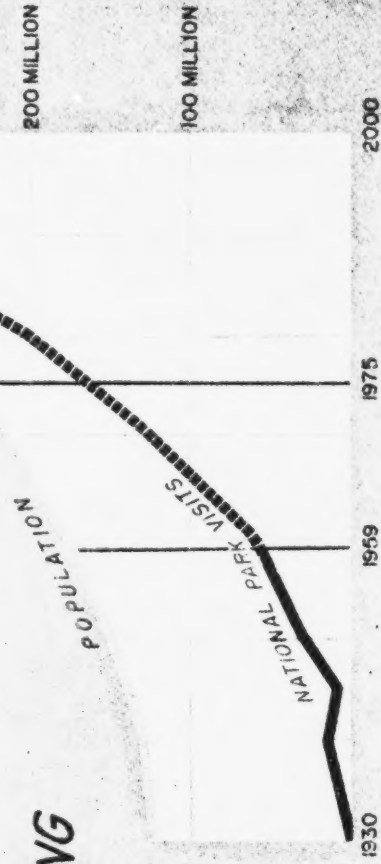
INCOMES are INCREASING



LEISURE TIME is INCREASING



Our park visitation is increasing even faster than "exploding" population!



Withdrawal use demands for recreation water

Certain criteria have been established for various withdrawal uses of water in our parks and recreation areas. Generally speaking these can be broken down under the following headings:

1. Drinking and sanitary use.
2. Stock and wildlife watering.
3. Irrigation of lawns, campgrounds, and some rangelands.
4. Storage for fire protection and for regulation of distribution of small flows to meet peak daily or hourly demands.

The quantitative water needs for these purposes are not yet available as national averages, or for the individual water resources regions. However, the 1957 average for the 23 national parks, monuments, and recreation areas in the Lower Colorado River Basin was 155 gallons per visitor-day. The majority of the visitors spent less than a day in any one area, and their total water demand in a region was certainly in excess of 175 gallons per capita per day. As a preliminary estimate for this report, provision should be made for 155 gallons per visitor to a national park or monument, 75 gallons per visitor to a National forest or State park, and 30 gallons per visitor to a county park. Applying these figures to visitor counts, the following present demands for outdoor recreation result:

[Billion gallons per year]	
In National parks	9.3
In National forests	6.0
In State parks	13.3
In county parks	7.5
Total	¹ 36.1

¹ Or 110,000 acre-feet per year.

The estimated demands for withdrawal use of water in National, State, and local parks for the years 1980 and 2000 by water resources regions are given in the following table.

[In millions of gallons]

Region	1980	2000
New England	3,131	4,781
Delaware and Hudson	7,389	11,472
Chesapeake Bay	5,700	9,657
Eastern Great Lakes	2,614	4,076
Ohio	5,406	8,283
Cumberland	720	1,121
Tennessee	2,351	3,316
Southeast	5,472	9,025
Western Great Lakes	3,587	5,519
Upper Mississippi	2,508	3,836
Lower Mississippi	1,478	2,427
Upper Missouri	5,033	8,180
Lower Missouri	1,005	1,498
Upper Arkansas-Red	1,687	2,613
Lower Arkansas-White-Red	1,216	1,827
Western Gulf	1,064	1,715
Rio Grande-Pecos	669	1,013
Colorado	2,793	4,808
Great Basin	270	476
Pacific Northwest	4,258	6,741
Central Pacific	2,261	3,885
South Pacific	3,114	4,974
Total	63,725	101,842

SPECIAL WATER PROBLEMS IN THE NATIONAL PARK SYSTEM

Water rights

One of the major water problems facing the National Park Service, particularly with respect to meeting future needs, is the unresolved question of respective Federal and State jurisdiction over the use of waters, particularly in the States west of the 98th meridian. Beginning with the Appropriation Act for the Department of the Interior for 1937 fiscal year, Congress has provided funds for the acquisition of water rights, with land which may have to be acquired to gain title to the water rights. Some purchases have been, and still are being made, but many more appropriative rights have been established at much less cost in compliance with the respective State water laws, by application to the State, permit, license and adjudication or by Federal withdrawal.

Specific park problems

Everglades National Park, Fla. (southeast water resources region), was established in 1947, with prior authorization of 1944, to protect the resources

within the proposed area. Also in 1947, the area to the north and east of the park, including the city of Miami, was included in the Central and Southern Florida Flood Control District under State law, and the U.S. Corps of Engineers was authorized to design and construct the central and southern Florida flood control project, which includes measures to drain the source of water which constitutes one of the major resources of the park. Conflicting interests are developing as expanding Miami makes it desirable to drain more of the area adjacent to the park, and expanding markets for winter crops create an irrigation demand for the water which might otherwise be drained to the park. The resolution of the problem is partially complicated by the fact that the park is not a part of the district to be included in the State or district planning for the socioeconomic growth of Dade County. The problem is further complicated by the fact that the Florida water laws, although based on the riparian doctrine, do not appear to provide that past surface waterflow and ground water seepage to any riparian land must be preserved. The State protection of the riparian rights has not yet been fully explored, however.

Studies of this project have not yet been completed, but present estimates are between 1,500,000 and 2 million acre-feet of surface flow, and about 100,000 acre-feet of groundwater seepage, in addition to precipitation, are needed per year to preserve the ecological balance in Everglades National Park, Fla., and the extent to which those supplies can be maintained will depend on the effectiveness and design and operation of upstream drainage by the central and southern Florida flood control project.

Availability of water in arid regions

Another problem of the Park Service is that the site of the water use is based on the location of the public attractions, and not on the proximity of suitable sources of water. Adequate early water supplies could originally be obtained from local springs or streams, or shallow wells. However, the mere proximity of those sources has resulted in pollution by the consumers. The magnitude of annual increases in public use of the areas has also made it necessary to go far afield, in one case a 23-mile pipeline, and in another a well 1,700 feet deep, to obtain suitable supplies. The former is the supply for Mesa Verde National Park, Colo. (Colorado River water resources region), where the pipeline had to cross much private land outside the park, and where the water rights are in competition with those for agricultural and municipal purposes outside of the park.

Municipal rights

Finally, although municipal rights have been established for some areas such as Zion National Park, Utah, and the visitor concentrations on the north and south rims of Grand Canyon National Park, Ariz. (Colorado River water resources regions), most developed communities are too small for municipal classification and rights must be established for domestic or industrial purposes. The difference is that a municipal right can be established to cover continuing growth while the other rights must be perfected within a reasonable time on the basis of actual prior use. The latter are not compatible with the continuing increases in visitors with no apparent limits by 1980, or perhaps 2000.

APPENDIX

RECOMMENDED GENERAL POLICY OF THE FEDERAL GOVERNMENT RELATIVE TO PUBLIC RECREATION

Prepared and adopted by the Federal Interagency Committee on Recreation, Washington, D.C.

(First adopted November 1, 1951; reaffirmed October 3, 1958)

1. The U.S. Government recognizes that:

(a) Recreation is a human need which is essential at all times to the well-being of people, and that the national welfare is promoted by providing opportunities for wholesome and adequate recreation. Recreation activities are highly personalized and varied. The provision of necessary recreation facilities and services requires National, State, and local effort, both public and private.

(b) More recreation facilities and services are needed today than ever before due to the continued growth and urbanization of the population, increase in amount of leisure time, improved transportation, higher standards of living, greater appreciation of the values of recreation, and inadequacy of present facilities. Opportunities for participation in certain forms of outdoor recreation, such as enjoyment of superlative scenery and the great places of history, camping, picnicking, water and winter sports, hiking, mountain climbing, wilderness travel, hunting and fishing, will become more and more limited as our population grows, unless the limited supply of land and water areas and cultural resources suitable for recreation are conserved, and unless damages to recreation values inherent therein are prevented and repaired.

(c) It is the responsibility of communities to provide recreation areas, facilities, and services to the people within their political boundaries through private and public agencies. The State governments have the responsibility to assist the communities by enacting adequate enabling laws, by providing advisory and information services and by providing such complementary recreation areas, facilities, and services throughout the State as may be needed. It is the responsibility of the Federal Government to develop, and to arrange for others to develop, the recreation resources on the federally owned lands, and to complement State and local programs in full cooperation with the States and their political subdivisions, without assuming responsibilities that properly rest within the States and their political subdivisions.

2. Therefore, it shall be the policy of the Federal Government to promote and to facilitate the development of adequate and coordinated recreation facilities and services throughout the Nation, and for this purpose the Federal Government shall—

(a) Recognize and appraise the recreation potentialities on all federally owned lands, water areas, and facilities; and, consistent with the fullest national interests, conserve and make provisions for adequate and appropriate facilities for the use of those resources for public recreation.

(b) Set aside or acquire lands needed for public park and recreation purposes, and administer and use them for such purposes, in accordance with the basic legislation covering their acquisition and use.

(c) Permit and encourage the States, their political subdivisions and others, to construct and operate recreation facilities and programs on Federal Government land when it is in the public interest to do so, taking into account the long-range recreation plans of the States.

(d) Work with the States and Territories on request, and with their political subdivisions with the consent of the States, in planning sound, long-range programs and services for State and local areas to the end that the total recreation provisions by all levels of government shall be cooperatively planned.

(e) Encourage national, State, and local leadership, both public and private to develop recreation facilities and services adequate to meet the needs and desires of the people.

(f) Provide technical leadership and guidance in the planning and development of recreation facilities and services including the collection and dissemination of necessary and desirable data, pertinent to such planning and development through Federal agencies concerned with recreation.

(g) Develop and maintain in cooperation with State and local governmental agencies and private interests a national recreation plan which will serve as a guide to public and private agencies in integrating their activities into the overall recreation needs of the country.

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